Answer on Question #45243 – Math - Geometry

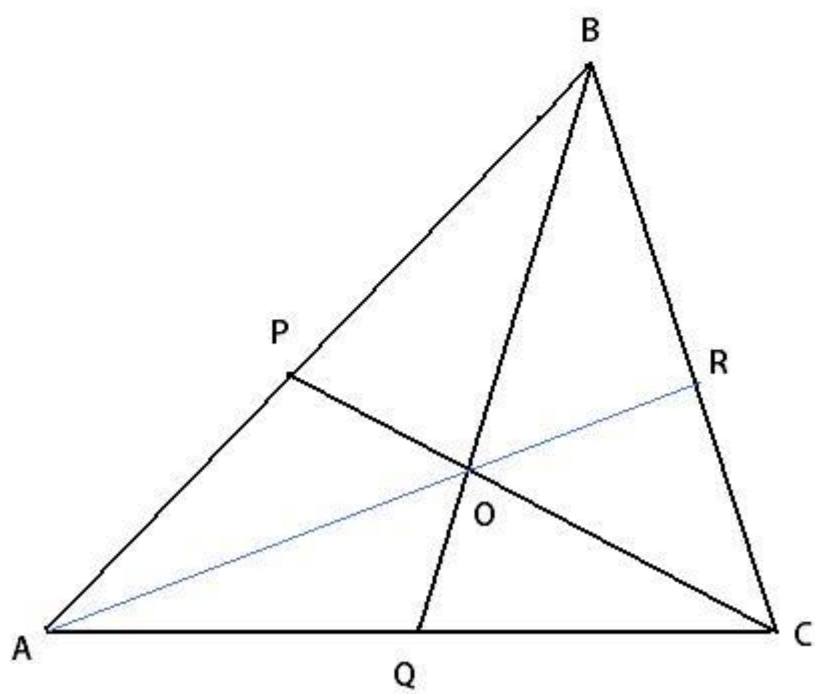
in a triangle ABC PQ II BC

P be the mid point of side AB and Q be the mid point of AC

then prove that area of triangle OBC=area of rectangle OPAQ

[note-- QB and PC are crossing lines inside the triangle and they meet at a point O which lies inside the triangle]

Solution



If P is midpoint of AB than CP is median,

if Q is midpoint of AC than BQ is median.

Let AR be the third median.

O is the centroid (point where medians meet).

One of the properties of medians is that the three medians divide the triangle into 6 smaller triangles that all have the same area, even though they may have different shapes.

I.e. $area\ of\ OPA = area\ of\ OQA = area\ of\ OPB = area\ of\ OQC =$

$$= area\ of\ OBR = area\ of\ ORC = \frac{1}{6}\ (area\ of\ ABC).$$

$Area\ of\ OPQA = area\ of\ OPA + area\ of\ OQA$

$Area\ of\ OBC = area\ of\ OBR + area\ of\ ORC.$

Therefore:
$Area\ of\ OPQA = area\ of\ OBC = \frac{1}{3}(area\ of\ ABC).$